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JOURNAL OF SOUTH AFRICAN BOTANY

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JOURNAL
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EUPHORBIA SPECIES FROM THE FLORA
ZAMBESIACA AREA: IV

L. C. LEACH

(With Plate XL)

Euphorbia persistentifolia Leach, sp. nov.

Euphorbia sp. "A", White, Dyer & Sloane, The Succulent Euphorbieae, 2: 978 (1941).—*E. sp.* "C", White, Dyer & Sloane, tom. cit.: 980 (1941).—*Euphorbia memorosa** sensu Jacobsen, Handbook Succ. Pl. 1: 451 (1960), pro parte quoad distrib. Wankie.

E. heterochromae Pax affinis sed crassiore habitu, caule medio crasso, marginibus corneis semper continuis, foliis maxime grandioribus subpersistentibus, capsula grandiore truncata, semine majore laevi; *E. graniticolae* Leach affinis sed ramis ramosis segmentis longioribus angulis paucioribus, foliis grandioribus subpersistentibus, inflorescentia unicymosa, involucro capsula et semine omnino multo majoribus differt.

Arbuscula crassa succulenta spinosa c. 2 m. alta (usque ad 3.5 m.), caule medio crasso angulato spinoso (rariter trunco cylindrico nudo), ramis ascendentibus erectis plus minusve verticillatis; rami secundarii et ramuli verticillati ex marginibus ad basem segmentorum producti. *Rami* crassi, 2—5 cm. diam., in segmenta constricti; segmenta usque ad 40 cm. longa, faciebus lateralibus subparallelis planis aliquantum concavis vel sulcatis, 4—5-angulati, plerumque 4, angulis plus minusve aequis (saepe sinuato-tuberculatis), margine continuo, corneo conspicuo, spinis binis rectis (raro uncinatis) divergentibus 3—7 mm. (15 mm.) longis armato. *Folia* anguste elliptica vel

*An error for *Euphorbia memoralis*.

anguste obovata acuta subcarnosa, ad 6 (10) cm. longa, ad 1·6 (2·5) cm. lata subpersistentia ad basem spinulis binis instructa. *Inflorescentia* unicymosa, breviter pedunculata, 4—6 mm. supra spinas producta, cyathii 3 horizontaliter dispositis. *Pedunculus* bibracteatus ad 3 mm. longus; bracteae depresso ovatae truncatae, irregulariter dentatae; cyathium medium plerumque masculinum deciduum interdum bisexualae; cyathia lateralialia bisexualia, ramis cymae ad 3 mm. longis; bracteae plus minusve ovatae irregulariter denticulatae. *Involucrum* infundibuliforme 5—6 mm. diam., 3·5—4 mm. longum, lobis 5 erectis transverse late ellipticis fimbriatis; glandulae 5 transverse oblongo-ellipticae 2—3 mm. latae, leviter foveolatae concavae vel planae suberectae interdum patulae. *Flores masculi* 20—25 (ad 45), 5-fasciculati bracteolis fimbriis filiformibus; bracteae fasciculares fimbriatae laciniate. *Ovarium* pedicello curvato mox exsertum; styli c. 2·5 mm. longi, plerumque in columnam breviter connati, patuli reflexique, apicibus bifidis rugulosis. *Capsula* 3-lobata interdum 4, truncata 5·5—7 mm. diam., 3—4 mm. longa, pedicello ad 7 mm. longo, perianthio irregulariter deltato. *Semen* subglobosum c. 2·5 mm. $\times$ 2 mm. laeve vel perleviter pustulatum flavo-brunneum.

Type: *L. C. Leach* 9383 (BM; G; K; PRE; SRGH, holotype).

S. RHODESIA. Selukwe Distr.: Bonsor Mine, steep rocky slope, alt. 3,900', cult. PRE, fl. & fr. Nov. 1942, lvs. Feb. 1943, *Carruthers-Smith* in Nat. Herb. 28440/41/42 (PRE; SRGH); Sebungwe Distr.: Zambesi Valley "inaccessible part" fl. 10.ix.1949, *O. West* 2920 (PRE); "sandstone hills near Binja's Kraal", fl. Sept. 1955, *R. M. Davies* in SRGH 55360 (SRGH). Wankie Distr.: Wankie, cult. Selukwe, st. Sept. 1942, *R. H. R. Stevenson* in Nat. Herb. 28439 (PRE); 10 m. S of Wankie, alt. 3,200', st. 14.vii.1952, *L. E. Codd* 7073 (PRE); Lukosi Riv., fl. & fr. 1956, *D. C. Plowes* 1903 (PRE; SRGH); Deka Riv., alt. c. 2,300', cult. Greendale, fl. Oct. 1961, *Leach* 5194 (K); Inyantui Riv., near Inyantue Pens, c. 2,750' alt., lvs. 29.iii.1963, *Leach* 11629 (BM; K; PRE; SRGH). Sipolilo Distr.: 28 m. N of Sipolilo, Zambesi Escarp., alt. 3,000', plants with nude cylindric trunks, up to 9' high, lvs. 17.iv.1960, *Leach & Brunton* 9867 (K; PRE; SRGH).

ZAMBIA. Mazabuka Distr.: Chirundu, Zambesi Riv. banks, approx. 16° 1' S, 28° 47' E, fl. & fr. 20.ix.1959, cult. Greendale, lvs. June 1964, *Leach* 9383 (BM; G; K; PRE; SRGH); $\pm$ 22 m. WNW of Chirundu, cult. Greendale, lvs. 27.ii.1960, fl. Oct. 1961, *Leach* 9784 (K; LISC; PRE; SRGH); $\cdot$ 5 m. W of Chirundu, lvs. 28.ii.1960, *Leach* 9810 (PRE; SRGH); $\pm$ 20 m. WNW of Chirundu, cult. Greendale, lvs. June 1961, *A. S. Boughey* in *Leach* 9641 (SRGH), idem, fl. Oct. 1961, (BM); Kafue Gorge, cult. Greendale, lvs. June 1961, *R. B. Drummond* 6746 (SRGH); 3 m. SW of Kafue, plants with cylindric nude

trunks to 10' high, cult. Greendale, lvs. June, 1961, *Leach* 9803 (PRE; SRGH); $\pm$ 18 m. WNW of Chirundu, cult. Greendale, fl. & fr. Nov. 1961, *T. Brunton* in *Leach* 9506 (BM; G; K; LISC; PRE; SRGH).

L. Vereker s.n. (PRE), "Victoria Falls, up to 24" high" and *D. C. Plowes* 1895 (PRE), "basalt gorge below Victoria Falls", appear both to belong here but identification is uncertain as the specimens are sterile; the author, unfortunately, has not seen this particular community.

E. persistentifolia is one of a numerous group of closely related taxa which includes such diverse species as *E. heterochroma* Pax, *E. griseola* Pax, *E. memorialis* R. A. Dyer and *E. graniticola* Leach; it differs from all these in a number of characters as well as in the much larger size and more persistent nature of its leaves by which it may be immediately distinguished.

It seems that the new species has its closest affinity with *E. heterochroma* but in habit and vegetative characters it is very different indeed while its inflorescence is more markedly pedunculate, has a differently shaped involucre with the glands generally suberect and distinctly separate, more numerous male flowers and longer bifid styles, the capsule is also larger and more truncate and the seed is smooth or very obscurely pustulate (the seed of *E. heterochroma* is verrucose); it is interesting to note that the seeds of *E. persistentifolia* are also sometimes somewhat verrucose when immature.

In habit the closest relationship is perhaps with *E. graniticola* but the branches of *E. persistentifolia* are rather more frequently rebranched, very much less or not at all winged and have much longer segments with fewer angles; the subpersistent leaves are very much larger and an entirely different shape from those of *E. graniticola*; finally the new species is a very much faster growing plant with the respective juveniles shewing marked differences.

The distribution, as at present known, is generally along the Zambesi Valley from below the Victoria Falls to a little below the Zambesi/Kafue confluence; populations along the various tributaries are not extensive except in the case of the Kafue River, where plants are known to occur at least as far upstream as Kafue. There is also a strangely disjunct community near Selukwe some 400 miles to the south of the main distribution.

E. persistentifolia is an extremely variable species; plants from the Wankie area have rather smaller more fleshy leaves than the Chirundu specimens and the capsules tend to be less truncate; in habit the Wankie plants resemble *E. graniticola* more closely than do those from lower down the Zambesi Valley, while those inhabiting the southern escarpment, near Sipolilo in S. Rhodesia, usually adopt a more tree-like habit.

The greatest range of variability occurs in the Chirundu/Kafue area where individuals may have the typical, stout, erect arbusculent habit: be much

reduced in height, divaricately branched and rebranched: or less frequently, become small trees with stout cylindric nude trunks; specimens may be strongly armed to almost unarmed. It is also in this area that the tendency to produce bisexual primary cyathia and 4-locular capsules is most marked (a tendency continued in cultivation); the number of male flowers varies from 20 to 45 and the fascicular bracts are occasionally absent.

The Selukwe community is reported as growing on a steep rocky slope in shade; plants are consequently rather straggling; it was at one time thought that these might be outlying specimens of *E. memorialis*, which species is endemic on the serpentine dyke much further north in the Mtoroshanga/Horseshoe Block area, but although related, these plants are quite distinct. It seems probable that this population will be found to extend along the hills of the dyke to the south of Selukwe as the author has seen a plant in Mr. Aurret's garden; this is reported by him as having been collected on his "Mount Belingwe Farm" which lies immediately to the south of Mt. Emberengwa (approx. 70 miles south of Selukwe).

Plant a spiny succulent stout shrub or small tree, usually a shrub c. 2 m. high, with a stout, angled central stem and ascending erect whorled branches, sometimes a shrub c. 1 m. high with divaricately branched and rebranched spreading branches, or more rarely, a small tree up to c. 3.5 m. high with a stout cylindric trunk and a crown of spreading branches. *Branches* stout, 2—5 cm. diam., 4—5 angled (usually 4), with the sides flat or concave, seldom sufficiently so as to be described as winged, constricted into long segments up to 40 cm. long with the sides almost parallel, very slightly tapering upwards, generally somewhat sparingly branched and rebranched, more or less whorled from shortly above the constrictions; the angles sinuate-tuberculate, often not very prominently so, sometimes almost even, with a conspicuous whitish horny margin, armed with a pair of straight (rarely curved) diverging spines, 3—7 (15) mm. long at the apex of the tubercles, 10—20 mm. apart along the angles, with a pair of prickles at the leaf base. *Leaves* narrowly elliptic to narrowly obovate, acute, subfleshy, up to 10 cm. long, 2.5 cm. wide, generally c. 6 cm. $\times$ 1.6 cm.,

-
- (1) Lateral bisexual cyathium.
 - (2) Capsule.
 - (3) Peduncular bract.
 - (4) Involucral bract.
 - (5) Involucral lobe.
 - (6) Involucral gland.
 - (7) Seed.
 - (8) Ovule.
 - (9) Staminate flower with bracteole.
 - (10) Internal fascicular bract.
 - (11) Horny margin with spines.

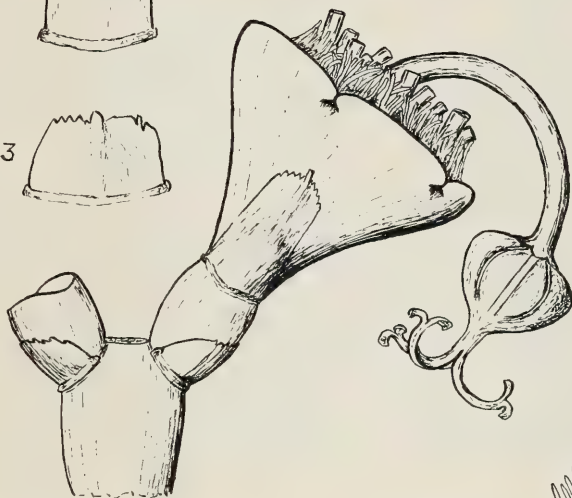
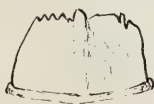
Euphorbia persistentifolia Leach

10MM

4



3



8



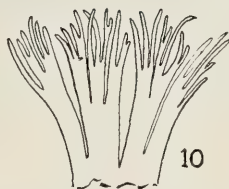
5mm

9

5

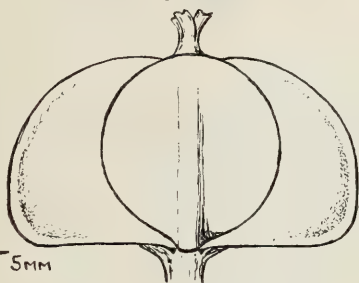


10



5MM

2



6



7



3mm

20MM

11

